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10/719,486	11/20/2003	Juan A. Coronado	TUC920030139US1	2523

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EXAMINER	
DARE, RYAN A	
ART UNIT	PAPER NUMBER
2186	

DATE MAILED: 06/02/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/719,486	CORONADO ET AL.	
	Examiner	Art Unit	
	Ryan Dare	2186	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *03/16/06*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-30* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *8-10,18-20 and 28-30* is/are allowed.

6)☒ Claim(s) *1-7,11-17 and 21-27* is/are rejected.

7)☒ Claim(s) *1* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *16 March 2006* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Drawings

1. The amendments to the drawings submitted on 3/16/06 are approved, and the corresponding objections are withdrawn.

Specification

2. The amendments to the drawings submitted on 3/16/06 resolve the objections made to the specification, and the objections are withdrawn.

Claim Objections

3. The amendment to claim 30 submitted on 3/16/06 overcomes the objection to this claim.

4. Applicant did not respond to the objection made by the examiner for claim 1. Claim 1 stands objected to for the reason listed below, as on the first Office Action.

5. Claim 1 is objected to because of the following informalities: Line 9 says "assigning each host computer to the a host computer group." Examiner believes this should say "assigning each host computer to a host computer group" and has been treated as such for the remainder of this Office Action. Appropriate correction is required.

Claim Rejections - 35 USC § 112

6. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

7. Claim 2 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claim 2 recites the limitation "current base logical volume" in line 12. There is insufficient antecedent basis for this limitation in the claim. The examiner believes Applicant intended to amend this to say "base logical volume" by deleting the word "current" and has treated it as such for the remainder of this Office Action.

8. The examiner thanks Applicant for the amendments to the claims submitted on 3/16/06, which clarify the invention substantially. With the exception of the above-mentioned problem, the rejections of the claims under 35 U.S.C. 112 are withdrawn.

Claim Rejections - 35 USC § 103

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

10. The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

11. Claim 1-2, 11-12, and 21-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over McKean et al., US Patent 6,438,648, in view of Fairchild et al., US PG Pub 2002/0069307.

12. With respect to claim 1, McKean et al. teach a method to control access to logical volumes in an information and retrieval system, comprising the steps of:

providing an information storage and retrieval system comprising a plurality of logical volumes, in fig. 2, data storage system 126.

forming (N) host computer groups, wherein (N) is greater than or equal to 1, in fig. 2, numeral 150 and in fig. 3.

assigning each host computer to a host computer group, in fig.3, step 222.

forming (N) logical volume groups, in col. 5, lines 5-16. Each logical volume group is inherently created with each host computer group. While it is possible that each host computer group may access all logical volumes, each host computer in the host computer group has similar operating requirements for each LU, which may involve only accessing a fraction of LU's;

assigning one or more of said plurality of logical volumes to a logical volume group, in col. 5, lines 5-16;

McKean et al. fail to teach the use of parallel access volumes (PAVs), as they were not widely used at the time of invention. Fairchild et al., whose patent has a later date of invention, teach the use of parallel access volumes in an information storage and retrieval system, specifically the steps of:

creating a parallel access volume, in par. 47, lines 3-6;

persistently associating said parallel access volume with an original base logical volume, wherein said original base logical volume is assigned to the (i)th logical volume group, wherein (i) is greater than or equal to 1 and less than or equal to (N), in par. 47;

permitting each host computer assigned to the (i)th host computer group to access said parallel access volume, in fig. 9. Any host that is allowed to use the base volume is allowed to use the parallel access volume (alias UCB) if the base volume is busy (steps 160-165).

13. It would have been obvious to one of ordinary skill in the art at the time the invention was made, to modify the information and storage retrieval system using parallel access volumes of Fairchild et al. with the information storage and retrieval system control access method of McKean et al. in order to allow simultaneous access to a logical volume, as taught by Fairchild et al. in par. 44, and to simplify the management of host computers by grouping them together, which thereby reduces the amount of RAM needed to control access by the host computers to the logical volumes, as taught by McKean et al. in col. 3, lines 54-63.

14. With respect to claim 2, McKean et al. and Fairchild et al. teach the method of claim 1, as discussed supra. McKean et al. teach the steps of:

requesting by one of said plurality of host computers to access a designated logical volume, in fig. 2, where each computer in the same group sends the same target ID to the controller 128;

determining that said requesting host computer is assigned to the (j)th host computer group, wherein (j) is greater than or equal to 1 and less than or equal to (N), in col. 6, lines 34-46, where j is the target ID of the group.

McKean et al. fail to teach the use of PAVs. Fairchild et al. teach:

determining if said designated logical volume is a parallel access volume, in fig. 9, decision block 153;

operative if said designated logical volume is a parallel access volume, determining the base logical volume associated with said parallel access volume, in fig. 9, step 160.

McKean et al. teach:

determining if said base logical volume is assigned to the (j)th logical volume group, in col. 7, lines 60-67.

Fairchild et al. fail to teach the use of host computer groups to control access rights to logical volume groups, but if you were to modify the invention of McKean et al. with PAVs as with the invention of Fairchild et al., it would be obvious to one of ordinary skill in the art to include the parallel access volume in the same group as the base volume because if a host computer group has access to the original base volume, it

should have access rights to the parallel access volume, since it contains the same data, thereby teaching the limitations:

operative if said base logical volume is assigned to the (j)th logical volume group, permitting said requesting host computer to access said base logical volume;

operative if said base logical volume is not assigned to the (j)th logical volume group, disallowing said requesting host computer from accessing said base logical volume.

15. With respect to claim 11, Applicant claims an article manufacture that incorporates the same limitations as claims 1-2 and is therefore rejected using similar logic.

16. With respect to claim 12, McKean et al. teach the article of manufacture of claim 11, wherein a first person owns said requesting host computer, and a second person owns said article of manufacture, in fig. 2, where one of the computers 142-148 is the requesting host computer and the article of manufacture is the controller 128.

17. Claim 21 teaches a computer program product having computer readable program code, which performs the same functions of the computer readable program code embodied on an article of manufacture in claim 11, and is therefore rejected using similar logic used for claim 11.

18. With respect to claim 22, McKean teaches the computer program product of claim 21, wherein a first person owns said requesting host computer, and a second person owns said article of manufacture, in fig. 2, where one of the computers 142-148 is the requesting host computer and the article of manufacture is the controller 128.

19. Claims 3-4, 13-14, and 23-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over McKean et al. and Fairchild et al. as applied to claims 1-2 above, and further in view of Yamagami et al., US PG Pub 2003/0233518.

20. With respect to claim 3, McKean et al. and Fairchild et al. teach all other limitations of the parent claims as discussed supra, but fail to teach reassigning aliases. Yamagami et al. teach:

receiving a request to reassign said alias to a different one of said plurality of logical volumes, in fig. 7, step 701. Reassigning an alias is synonymous with creating another mirror, which is what Yamagami et al. teaches;

determining if said different logical volume and said original base logical volume are assigned to the same logical volume group, in fig. 7, steps 703 and 704. The user can only access volumes in his own group. Therefore the base logical volume and the candidates for a mirror are in the same volume group (pool);

operative if said different logical volume and said original base logical volume are assigned to the same logical volume group, reassigning said alias to said different base logical volume, in fig. 7, step 706;

operative if said different logical volume and said original base logical volume are not assigned to the same logical volume group, denying the request to assign the alias, in fig. 7, step 703, where it checks to see if the user can access the specified volume pool.

21. With respect to claim 4, McKean et al. and Fairchild et al. teach all other limitations of the parent claim as discussed supra, but fail to teach deleting an alias. Yamagami et al. teach:

receiving a request to delete said alias, in fig. 8, step 801, where deleting an alias is synonymous with deleting a mirror;

deleting said alias, in fig. 8, step 802.

22. Claim 13 teaches an article of manufacture containing a computer readable program code that performs the method of claim 3, and is therefore rejected using similar logic.

23. Claim 14 teaches an article of manufacture containing a computer readable program code that performs the method of claim 4, and is therefore rejected using similar logic.

24. Claim 23 teaches a computer program product containing a computer readable program code that performs the method of claim 3, and is therefore rejected using similar logic.

25. Claim 24 teaches a computer program product containing a computer readable program code that performs the method of claim 4, and is therefore rejected using similar logic.

26. It would have been obvious to one of ordinary skill in the art, at the time the invention was made, to modify the information storage and retrieval system of McKean et al. and Fairchild et al. with the information storage and retrieval system of Yamagami

et al. in order to choose the ideal mirror for performance and reliability, as taught by Yamagami et al. in paragraphs 8-14.

Allowable Subject Matter

27. Claims 8-10, 18-20, and 28-30 contain subject matter that is allowable over prior art.

28. The following is a statement of reasons for the indication of allowable subject matter: No prior art of record found in the examiner's search disclosed a method of assigning, unassigning or deleting logical volumes that have parallel access volumes associated with them, from logical volume groups as disclosed in claims 8-10. Claims 18-20 and 28-30 are directed to an article of manufacture and a computer program product, respectively. They disclose the same limitations as claims 8-10, which make them allowable for the same reason.

Response to Arguments

29. Applicant's arguments filed 3/16/06 have been fully considered but they are not persuasive. With regard to claim 1, while the disk drives included in Peripheral 138 of fig. 2 form the logical volumes used by the host computer groups, each disk drive is not a separate group. The separate logical volume groups of the present invention correspond to the unique target ID's of the host computer groups. The hosts of the same group have similar operating requirements with regard to each of the LU's in Peripheral 138. Since there are N separate sets of operating requirements that

correspond to the N host groups, there are inherently the same number of host groups as there are logical volume groups. For example, the operating requirements for group number 2 could say that the group 2 has access to LU's 0 and 1, but not the remaining LU's. Thus it has been shown presently that McKean teaches a data storage system comprising a number of host computer groups and a corresponding same number of logical volume groups.

Conclusion

30. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

31. The prior art made of record on form PTO-892 and not relied upon is considered pertinent to applicant's disclosure. Applicant is required under 37 C.F.R. § 1.111(c) to consider these references fully when responding to this action. The documents cited therein teach similar information storage and retrieval systems

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ryan Dare whose telephone number is (571)272-4069. The examiner can normally be reached on Mon-Fri 9:30-6.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Matt Kim can be reached on (571)272-4182. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Ryan A. Dare
May 25, 2006

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